

U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Phacelia submutica*

COMMON NAME: DeBeque phacelia

LEAD REGION: Region 6

INFORMATION CURRENT AS OF: March 6, 2006

STATUS/ACTION

☐ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

☐ New candidate

☒ Continuing candidate

☐ Non-petitioned

☒ Petitioned - Date petition received: **05/11/2004, 04/28/2005**

☐ 90-day positive - FR date:

☐ 12-month warranted but precluded - FR date:

☐ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES

a) Is listing warranted (if yes, see summary of threats below)? YES

b) To date, has publication of a proposal to list been precluded by other higher priority listing actions? YES

c) If the answer to a. and b. is "yes," provide an explanation of why the action is precluded:

We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (<http://endangered.fws.gov/>).

___ Listing priority change

Former LP: ___

New LP: ___

Date when the species first became a Candidate (as currently defined): **02/21/1990**

___ Candidate removal: Former LP: ___

___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

___ U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

___ F – Range is no longer a U.S. territory.

___ I – Insufficient information exists on biological vulnerability and threats to support listing.

___ M – Taxon mistakenly included in past notice of review.

___ N – Taxon does not meet the Act's definition of "species."

___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering plant, *Hydrophyllaceae*

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Colorado

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:
Garfield and Mesa Counties, Colorado

LAND OWNERSHIP: Land ownership of the 28 known extant populations is distributed as follows (Colorado Natural Heritage Program [CNHP] 2004):

<u>OWNER</u>	<u># OF POPULATIONS</u>
BLM	17
USFS	1
BLM and USFS lands	3
BLM and Private land	4
Private land	3

Of the seven historical populations:

<u>OWNER</u>	<u># OF POPULATIONS</u>
BLM	3
BLM and Private land	3
Private	1

LEAD REGION CONTACT: Pat Mehlhop, (303) 236-4215

LEAD FIELD OFFICE CONTACT: Ellen Mayo, (970) 243-2778, ext. 14

BIOLOGICAL INFORMATION

Species Description

DeBeque phacelia is a low growing summer annual plant with a tap root. The prostrate stems are 2-8 centimeters (0.8-3 inches) long, often branched at the base and forming a low rosette. Stems are often deep red and more or less hairy with straight and fairly stiff hairs. Leaves are similarly hairy, reddish at maturity, 5-15 millimeters (0.2-0.6 in.) long, egg-shaped or almost rectangular with rounded corners, the bases abruptly tapering to a wedge-shaped point. Leaf margins are smooth or toothed. The tube-shaped flowers are light yellow or cream colored, crowded on the stem. Unlike many *Phacelia* species, the stamens do not protrude beyond the petals. The style is 1-1.5 mm (0.04-0.06 in.) long and nearly hairless. The bracts around the seed capsules are 6-10 mm long (0.2-0.4 in.). The elongated-egg shaped seeds are 1.5-2 mm (0.6-0.8 in.) long with 6-12 fine corrugations, blackish brown and somewhat iridescent (O’Kane 1987; Harrington 1964; Howell 1944; Halse 1981).

Seeds usually germinate in early April (Burt and Spackman 1995) and plants flower from late April through late June (O’Kane 1987). Fruit set is from mid-May through late June. Individuals finish their life cycle by late June to early July, after which time they dry up and blow away. The species grows in a habitat with wide temperature fluctuations, long drought periods and erosive saline soils. Upon drying, the soils form deep cracks. Seeds are believed to plant themselves by falling into the cracks that close when wetted, thus covering the seeds (O’Kane 1987). Seed dormancy may be controlled by moisture, temperature and light. A persistent seed bank seems to be a requirement for continued survival of this species (Ladyman 2003).

Taxonomy

Howell (1944) recognized *Phacelia submutica* as related to but distinct from *Phacelia scopulina*. Halse (1981) gave *Phacelia scopulina* var. *submutica* varietal status that was challenged as incorrect by O’Kane (1987) because Halse used inadequate collection materials. *Phacelia submutica* is geographically isolated from *Phacelia scopulina*. Harrington (1964), Weber (1987), and Weber and Wittman (2001) recognize *P. submutica* as a valid taxon. The U.S. Fish and Wildlife Service accepts the species as *P. submutica*, while NatureServe follows Kartesz (1994) and tracks it as *P. scopulina* var. *submutica*.

Habitat

DeBeque phacelia is restricted to exposures of dark gray and brown clay soils derived from the Atwell Gulch and Shire members of the Wasatch Formation (Donnell 1969; O’Kane 1987). These expansive clay soils are found on moderately steep slopes, benches and ridge tops adjacent to valley floors in the Piceance Basin of Colorado.

Historical Range/Distribution

DeBeque phacelia is a narrow endemic, restricted to barren and semi-barren hillsides on specific members of the Wasatch geological formation which has a limited distribution within the Piceance Basin in Mesa and Garfield Counties, Colorado. Osterhout first collected it from the town of DeBeque, Mesa County in 1911. Infrequent collections and observations were made in the same area between 1911 and 1980. Seven populations that were documented in 1982 and

1983 are now considered as historical records by CNHP. These populations have not been resurveyed for more than 20 years and their status is unknown (CNHP 2004). The seven historical populations occupied about 71 additional acres. Two of the historical locations were in a proposed reservoir project area that is still in the planning stage.

Occupied acreage of the seven historical populations is distributed as follows (CNHP 2004):

<u>OWNER</u>	<u>ACRES</u>
BLM	18
BLM and Private lands	45
Private lands	8

Current Range/Distribution

This species occurs on about 514 acres of currently known occupied habitat, which is limited to scattered outcrops of Atwell Gulch and Shire members of the Wasatch Formation over a range of about 17 miles X 17 miles (Burt and Spackman 1995). The species' known range is still restricted to the Piceance Basin near the town of DeBeque in Garfield and Mesa Counties in western Colorado (Ladyman 2003).

The 28 current populations occupy an estimated 514 acres. Occupied acreage of the 28 known extant populations is distributed as follows (CNHP 2004):

<u>OWNER</u>	<u>ACRES</u>
BLM	390
USFS	2
BLM and USFS lands	64
BLM and Private lands	47
Private lands	11

No occurrences have been found beyond the described habitat and range. Surveys for *Phacelia submutica* have been conducted outward from DeBeque as far as the exposed soil members extend within the geologic formation. The CNHP conducted surveys for the species in Garfield County (Lyon et al. 2001; CNHP 2002) and Mesa County (P. Lyon, CNHP, pers. comm. 2005). The CNHP has identified potential habitat beyond the known range of the species, using element distribution modeling. This new hypothetical habitat has not yet been verified in the field (Decker et al. 2005).

Population Estimates/Status

Twenty-eight current and seven historical occurrences of this species are recorded by the CNHP from data collected up to 2004. Only four populations have been revisited since 2000 (CNHP 2004). In a given year, a population may produce no individual plants, or it may produce thousands. Populations of the species cover small areas, often only a few square meters (Burt and Spackman 1995).

<u>OWNER</u>	<u># OF POPULATIONS</u>	<u># OF PLANTS</u>
BLM	17	2,861 - 16,659
USFS	1	12 - 300
BLM and USFS lands	3	270 - 7,200
BLM and Private lands	4	451 - 10,345
Private lands	3	700 - 1,500

The total number of plants estimated for the current 28 populations ranges from 3,594-34,504 plants on 503 acres of Federal and Federal/private land. Three populations on 11 acres of private land have an estimated 700-1,500 plants. The total number of plants estimated for the seven historical populations was 12,200 plants on 63 acres of Federal or Federal/private land and 200 plants on 7.7 acres in one private population (CNHP 2004).

THREATS

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

The species' habitat overlaps 100 percent with high quality oil and gas reserves that are being actively developed in the Piceance Basin (Cappa et al. 2005), especially in Coon Hollow and Sulphur Gulch (Burt and Spackman 1995). More than 57 percent of the DeBeque phacelia occurrences (16 populations) are on land currently leased for oil and gas drilling. The number of new drilling permits approved in Garfield County alone was 1,508 in 2005, twice as many as in 2004, with a similar increase expected in 2006 (Macke 2005). The future rate of leasing and drilling cannot be accurately predicted based on past use because development is booming in this area. In a statement before the Senate Appropriations Committee, Interior Subcommittee hearing on the oil and gas management program of the Bureau of Land Management (BLM) on October 25, 2005, Director Kathleen Clarke said that a 40 percent increase in applications for permits to drill is expected in 2006, compared to 2004, in the Piceance Basin.

The most significant threats to habitat associated with oil and gas development are well pad and road construction, installation of pipelines and associated buildings and holding tanks. More than 85 percent of the occurrences of the species are on land leased for oil and gas drilling. Eleven percent are on private land owned by Getty Oil (CNHP 2004).

Four BLM parcels leased in 2005 have 7 known extant populations of DeBeque phacelia on 65 acres with 2,297-5,197 plants. One historical occurrence within the lease area had more than 5,000 plants in 1983 (CNHP 2005). Given the current pressures to expedite drilling permits, it will be a challenge for BLM to protect the habitat for this species.

One population with 300-10,000 estimated plants (depending on the year) on 214 acres of BLM land is within an Area of Critical Environmental Concern (ACEC), which the BLM excluded from the South Shale Ridge lease sale (CNHP 2005; BLM 2005a).

Gas well pad density has been increased from 40- to 10-acre spacing in one pilot project area. Denser well spacing leads to an increase in incidental impacts such as informal vehicle turn-sites (Ladyman 2003). Proximity to the development activities makes the species vulnerable to soil disturbance which alters the unique soil structure and disturbs seed banks that are critical to the survival of this species (Burt and Spackman 1995).

Coalbed methane development is occurring within the range of DeBeque phacelia, and the entire range of the species occupies active coal-bearing formations (Cappa et al. 2005). At least 30 wells have been drilled for coalbed methane extraction on South Shale Ridge in the vicinity of a known population of the plants, and at least 10 more wells are permitted but not yet drilled (Trappett, BLM, pers. comm. 2004). We do not have precise, current data on impacts to the species resulting from energy related development.

Energy development increases access to previously roadless areas, which encourages off-road vehicle (ORV) traffic. The ORV use occurs on BLM lands in the area now and has been observed within occupied species habitat by Burt and Spackman (1995) and by Service and BLM biologists. The ORV tracks through the plant populations have been reported during surveys, with no data on the number of tracks or destruction of plants (Burt and Spackman 1995).

Burt and Spackman (1995) and O’Kane (1987) describe two sites where portions of a population were devoid of plants where they had been trampled by cattle. Trampling increases soil compaction and erosion and alters the microhabitat the species requires. Trampled sites do not exhibit the cracked soil surface seen at other sites.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

Overutilization does not appear to be a threat.

C. Disease or Predation.

None known.

D. The Inadequacy of Existing Regulatory Mechanisms.

Colorado has no rare plant protection legislation. The physical protection provided for designated protected areas on Federal lands is often no more than a few signs restricting ORV travel. The U.S. Forest Service (USFS) and BLM land managers work with CNHP to identify sites where plants occur. Both agencies require a biological survey and an evaluation of impact on the plant population before any project occurs in occupied habitat, but the conservation measures for candidate plants are only recommendations, not requirements (BLM 2005b). The BLM considers their standard stipulations to be adequate for finding that energy development will not affect the plants. These stipulations usually include no surface occupancy on known habitat for threatened, endangered and candidate species, and no surface occupancy for oil and gas facilities on slopes greater than 50 percent, except for pipelines (BLM 2005a).

Monitoring and inventory efforts have been few and vary between management districts depending on the staff and funding available in any given year (Ladyman 2003). The BLM policy is to have applicants conduct surveys of suitable plant habitat prior to approval for permits to drill and other specific projects (BLM 2005a). This is a concern for DeBeque phacelia

because these annual plants can only be found for a few weeks during years when precipitation has been favorable (Burt and Spackman 1995). Because available inventories are not recent, and drilling permits are to be expedited, the concern is that plant populations will be overlooked in the process. There is no documentation to show that this is occurring, but to minimize the risk, there is a need for a commitment by the agencies to avoid development on suitable habitat for this species.

The Pyramid Rock area is within a BLM ACEC and a State-registered Natural Area, including an estimated 300-10,000 estimated plants (depending on the year) on 214 acres. The amount of ORV tracking and grazing in these unfenced protected areas has not been documented. The ORV tracks through the plant populations have been reported during surveys, with no data on the number of tracks or destruction of plants (Burt and Spackman 1995). Several populations were reported to be within a proposed Lower Battlement Mesa Research Natural Area (RNA) on the White River National Forest. Current information on the status of the RNA is not available.

E. Other Natural or Manmade Factors Affecting Its Continued Existence.

Individual populations are susceptible to extirpation from stochastic variations in population demographics because--(1) the species is an annual, (2) its population size (in number of individuals) varies widely from year to year, and (3) population size (in acres) is small. This species occurs as ephemeral annual populations that depend on seed banks to survive the dry years. Therefore, populations are easily missed during one-time surveys prior to ground disturbing activities.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED: *Phacelia submutica* is ranked by NatureServe as imperiled throughout its range (G2), and by the CNHP as imperiled in the State (S2). The USFS lists the species as sensitive in Region 2. The USFS contracted a Technical Conservation Assessment for the species in 2003 (Ladyman), which provides a compilation of available information for the species. Populations exist within an ACEC on BLM land, which also is a registered State Natural Area, and within a proposed RNA in the White River National Forest. The BLM excluded the ACEC from the 2005 South Shale Ridge leasing sale.

SUMMARY OF THREATS

- DeBeque phacelia is facing quickly mounting threats due to changes in Federal policy and economic conditions influencing a large increase in energy development (Cappa et al. 2005; Center for Native Ecosystems 2005). Populations are located in the Piceance Basin gas field development area where The number of new drilling permits approved in Garfield County alone was 1,508 in 2005, twice as many as in 2004, with a similar increase expected in 2006 (Macke 2005).
- More than 57 percent of the DeBeque phacelia occurrences (16 populations) are on land leased for oil and gas drilling. Eleven percent (three populations) are on private land owned by an oil company (CNHP 2004).
- Fifteen populations (54 percent) occur within areas newly leased for oil and gas by the BLM in 2005.
- The range is narrow; populations are small and endemic to only two specific soil members.
- Populations are ephemeral and may be missed by surveys at the applications for permits to

drill stage because they depend on seed banks to survive the dry years.

- ORV use and trampling by cattle are current threats impacting some populations at a low level.

LISTING PRIORITY

THREAT			
MAGNITUDE	IMMEDIACY	TAXONOMY	PRIORITY
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8*
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

RATIONALE FOR LISTING PRIORITY NUMBER

Magnitude: Moderate.

Currently there is a dramatic increase in the intensity of energy exploration and development in the Piceance Basin. More than 85 percent of the total occurrences of the species are on land leased for oil and gas drilling. Of the occurrences on private land, most are owned by oil and gas companies (Center for Native Ecosystems 2005). In the South Shale Ridge area new leases will soon cover more than a third of the known range for this species. Part of this South Shale Ridge area was recommended as an ACEC in 1995 (Burt and Spackman). Known populations are in the midst of the second largest natural gas producing area in Colorado (Cappa et al 2005). Energy development activities can result in ground disturbance and destruction of plants and vital seed banks on the nearby plant habitat. With new technology and more aggressive exploration, construction sites are appearing on slopes (plant habitat) that were previously undisturbed. The ORV use is expected to increase as a result of new access provided by energy development (Ladyman 2003).

Imminence: Imminent.

Portions of the BLM South Shale Ridge area that have been withheld from leasing in the past because it was a wilderness study area were leased for oil and gas development in November 2005. Seven of the 28 recorded populations of DeBeque phacelia occur within these new lease areas. The number of new drilling permits approved in Garfield County was 1,508 in 2005, twice as many as in 2004, with another increase expected in 2006 (Macke 2005). Gas well pad density in the area has been increased from 1 per 40 acres to 1 per 20 acres and in some cases 1 pad per 10 acres. New pipelines have been built on occupied DeBeque phacelia habitat in

2004 to serve well sites (CNHP 2004; CNE et al 2005).

Section 365 of the Energy Policy Act of 2005 establishes a Federal Permit Streamlining Pilot Project with the intent to improve the efficiency of processing oil and gas use authorizations on Federal lands. The two BLM pilot project offices in Colorado are Glenwood Springs and Grand Junction (where the DeBeque phacelia occurs) (MOU in draft October 2005). Faster processing of permits to drill increases the likelihood of ground disturbance on DeBeque phacelia habitat because the plants are ephemeral annuals, and previous surveys have not been updated.

Imminence of threats for this species means destruction of the seed bank that is likely to occur within the next 3 years. Three successive years (a few weeks during each year) of surveys are required to be reasonably certain that suitable habitat for this species is occupied or not. Unless suitable habitat is avoided, seed banks are likely to be destroyed. There is no firm commitment at this time for managing agencies to require avoidance of candidate species' habitat.

YES Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. Threats are increasing rapidly, but ongoing and foreseeable impacts to the species are not likely to destroy occupied habitat throughout a major portion of the species' range within the next year.

DESCRIPTION OF MONITORING: There has been no recent formal monitoring. The biologist for the BLM Glenwood Springs Field Office keeps the Service informed of issues affecting the species. Several area biologists make site visits to assess the presence/absence of annual plant production at known sites. The Colorado Rare Plant Technical Committee discusses the status of all candidates during two meetings each year. Occurrence data is updated by the CNHP in their Biological Conservation Database (CNHP 2004). A volunteer steward sends field visit reports to the Colorado Natural Areas Program (Lindauer 2000).

COORDINATION WITH STATES: The Service coordinated with Colorado Natural Areas Program (R. Billerbeck, pers. comm. 2006), which is the State agency with responsibility for native plants. The Service has been conducting field surveys and field trips with Colorado Natural Areas Program land steward for Pyramid Rock Natural Area in the middle of the species' range. The CNHP at Colorado State University provided updated occurrence records in November 2004 as part of a section 6 agreement with the Service. They have no new 2005 data. In November 2005, CNHP provided a list of the recorded occurrences located within a BLM oil and gas lease sale.

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: /s/ Sharon Rose
Acting Regional Director, Fish and Wildlife Service

11/4/2005
Date



Concur: _____
Director, Fish and Wildlife Service

August 23, 2006
Date

Do not concur: _____
Director, Fish and Wildlife Service

Date